

WHAT IS CLAIMED IS:

1. A method of filling a damascene structure with liner and W characterized by improved resistance and resistance spread and adequate adhesion comprising: a
5 given damascene structure coated by a liner which purposely provides poor step coverage into the aforementioned structure, followed by a CVD W deposition, and followed by a metal isolation technique.

2. The method in claim 1 wherein said liner is a
10 refractory metal or compound thereof.

3. The method of claim 2 wherein said liner is TiN formed by PVD or by nitriding a PVD Ti.

4. The method of claim 1 wherein said liner is deposited in a way to provide poor step coverage like quick deposition,
15 positive bias, etc (refer to list in description)

5. A method of claim 1 wherein damascene structure is dual damascene.

6. A method of claim 1 wherein said metal isolation technique is CMP.

7. The method of claim 4 wherein said etch-stop is silicon nitride.
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8. The method of claim 1 wherein said etching through said contact hole pattern in said second photoresist layer into said ILD layer is performed with a mixture comprising gases of Ar,
25 CHF₃ and C₄F₈.

9. The method of claim 3 wherein said cleaning is performed by RIE.

10. The method of claim 1 wherein said etching through said line trench pattern of said first photoresist layer into said IMD
30 layer is performed with a mixture comprising gases of O₂, He and CF₄.

11. The method of claim 8 wherein said etching through said line trench pattern in said first photoresist layer into said IMD layer is performed until said etch-stop layer is reached.